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GERMAN DELEGATION

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Paris, 13th Mai, 1959 5. General

COORDINATING COMMITTEE

MEMORANDUM BY THE GERMAN DELEGATION

ON A PROPOSAL TO REDEFINE ITEM 1562

With reference to Cocom Document 3520 by which an "accident of definition"- exception-case has been submitted and in accordance with Cocom Document 1473, Annex C, the German Delegation propose to redefine item 1562 as follows :

"Tantalum electrolytic capacitors, n.e.s., as follows :

a) all types designed to operate at temperatures exceeding 85° C

b) solid sintered electrolyt capacitors

Reasoning :

The present definition "Tantalum electrolytic capacitors, n.e.s."

covers four types of capacitors completely different in their construction, namely :

1) those constructed with foils
2) the Wnedel-type
3) Sinter-capacitors (wet)
4) " " (dry)

Ad 1 : The construction of the tantalum - foil - capacitor is equal to the normal electrolytic - capacitor (winding type). However, by using tantalum instead of aluminium an extension of the temperature-range from -60° to +60° C (+85° C for short periods) is obtained, while aluminium-electrolytic-capacitors cover only tempera-

tures of -20° C to +70° C.
In the field of missile-technique and military telecommunication, a special design of tantalum-foil-capacitors with high service-temperatures of 125°C and more has been developed. This special design of capacitors could be kept under embargo by introducing a cutoff of +85°C which would set free the commercial types. Capacitors with a temperature-range below +85° C do in the opinion of German experts, not meet the requirements of a military usage.

Moreover, as this type has rather great dimensions, in general only stationary apparatus are equipped with them.

Ad 2: In the Wendel-type capacitor, the anode is constructed in a spiral made of tantalum. By this construction, only relatively low capacities are possible. The temperature-range extends from -60°C to +50°C (+60°C for short periods). On account of its comparatively inferior apparent - resistance - performance, the Wendel-type is mainly used for tone-frequencies, especially in hearing aids. Its other characteristics - normal temperature limits, comparatively short service - lifetime, and especially its performance of limited reliabilty - make the Wendel-type suitable only for a few special purposes in the civilian sector, while in the opinion of German experts, it cannot be used at all for military purposes.

Ad 3 and 4 :

Contrary to the foil-and-Wendel-capacitors, the sinter-capacitors have a sinter-anode instead of one out of solid metal. Thereby, the electrolyt can be a wet or a dry element. The construction of the sinter-capacitor makes it possible to have high capacities despite of very small dimensions of the apparatus. However, the wet sinter-type has some unfavourable characteristics in its electrical performance which limit its use considerably. It is,

therefore, very unlikely that this type will be installed in military equipment, e.g. in missiles, mobile equipment etc.

The sinter-capacitor with dry electrolyt can, indeed, be considered as the latest technical development in this field. At a frequency of 20 megacycles and a temperature of +20° C, the apparent-capacity of a wet sinter-capacitor drops to 7 or 8 %, while a dry sinter-capacitor maintains its capacity at 100%. Moreover, the latter has a larger temperature-range which extends up to +85°C, and - sometimes- down to -80° C.

In conclusion, it may be stated that the advantages of tantalum-capacitors, if compared to the normal capacitors, are to be found mainly in a larger temperature range. Nevertheless, the first three types described above do, in the opinion of German experts, no longer deserve an embargo - as far as their service temperature does not exceed +85°C - as they are of no military or strategic interest because of their size, construction or inferior electrical characteristics. Moreover, there is no danger of giving away any technological know-how when supplying normal types of the capacitors described under No. 1, 2 and 3 above, as such instruments cannot be easily copied, and their production stipulates a permanent and thorough laboratory-control.

In this connection, reference is made to W.P. 64, dated 30 June 1958, submitted by the Netherlands Delegation during the last list review, in which also the opinion is voiced to leave the wet-tantalum-electrolytic-capacitors free from embargo while covering the dry types.

The German Delegation would appreciate to hear the views of Governments on the above redefintion proposal at an early date.